

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 11-22 are presently active in this case; Claims 11-20 amended and Claims 21-22 added by way of the present amendment.

In the outstanding Official Action, the specification was objected to; Claims 11 and 18-20 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,013,948 to Akram et al.; and Claims 12-17 were objected to as being dependent upon a rejected base claim, but will be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

First, Applicants thank the Examiner for the indication that Claims 12-17 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. However, Applicants wish to maintain Claims 12-17 in dependent form at this time, because Applicants believe that Claim 11 from which these claims depend, now patentably defines over the cited references.

Turning now to the merits, in order to expedite issuance of a patent in this case, Applicants have amended Claims 11-20 to clarify the patentable features of the present invention over the cited reference. Specifically, Applicants' Claim 11, as amended, recites a method of fabricating conducting through-connections between a front face and a rear face of a substrate. The method includes hollowing into the rear face of the substrate a cavity that surrounds a stud of substrate material formed by the cavity to provide for electrical

conduction between the first and rear faces, and filling in the cavity with a dielectric material to isolate the stud from the rest of the substrate and to integrate the stud with the substrate while allowing the stud to show through the rear face. Also recited is hollowing the front face of the substrate opposite the stud so as to make the stud show through the front face thereby converting the stud into a conducting through-connection, and physically forming points of contact at each end of the stud showing through the substrate by depositing a conducting material, insulated from the substrate, on each of these ends. Thus, Applicants' Claim 11 has been amended to clarify that the conducting through connection is comprised of a stud of the actual substrate material. Independent Claim 19 has been similarly amended to emphasize that the through connection is a stud of the substrate of silicon that extends over an entire height of the substrate.

As described in Applicants' specification, the inventive method of forming a through connection by using a stud of the substrate material is directed to avoiding problems associated with conventional through hole methods wherein a hole is etched completely through the substrate and the sidewalls of the hole are insulated so that a conductive material can be filled into the substrate. Specifically, as described in Applicants' specification at page 2, lines 3-18, these conventional through hole forming techniques give rise to defects on the faces of the substrate and can entail a loss of insulation in the case of semiconducting substrates.

In contrast to the present invention, the cited reference to Akram merely discloses the conventional method and structure of a through hole connection. Specifically, Figures 6a through 6f of Akram, cited in the outstanding Official Action, disclose forming laser through

holes 56 in a substrate. As described at col. 7, line 66 – col. 8, line 15 of Akram, these through holes, or etched laser vias 56 are first coated with insulating layers 42 and then filled with conductive material 74 as with the conventional method described above. Thus, Akram et al. does not disclose a method or structure of a conducting through-connection that includes a stud of substrate material that provides for electrical conduction between front and rear faces of the substrate as now clearly recited in independent Claims 11 and 19.

For the reasons discussed above, Applicants' independent Claims 11 and 19 patentably define over the cited reference to Akram et al. Moreover, as Claims 12-18 and 21, and Claims 20 and 22 depend from independent Claims 11 and 19 respectively, these dependent claims also patentably define over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/03)


Gregory J. Maier
Attorney of Record
Registration No. 25,599
Edwin D. Garlepp
Registration No. 45,330